

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY REGION III 1650 Arch Street Philadelphia, Pennsylvania 19103-2029

SUBJECT: Long-term Stewardship Assessment (*desktop*) Bettis Atomic Power Laboratory EPA ID: PA0 89 009 0004 West Mifflin, Pennsylvania, 15122-0079

DATE: September 23, 2023

- TO: Alizabeth Olhasso, Section Manager File for Bettis Atomic Power Laboratory RCRA Corrective Action South Section
- FROM:Todd Richardson, RPMRCRA Corrective Action South Section

Remedy Assessment Summary:

On September 13, 2023, the United States Environmental Protection Agency's (USEPA) Land, Chemicals, and Redevelopment Division (LCRD) Project Manager, Todd Richardson, conducted a desktop long-term stewardship evaluation meeting for the Bettis Atomic Laboratory, West Mifflin, Pennsylvania. Based on the site remedy review meeting, file review, and the Calendar Year 2021 Environmental Monitoring Report, information gathered concludes the Facility is meeting the objectives of the August 2013 RCRA Corrective Action Permit (effective through administrative continuance), and USEPA's final remedy selected in the November 2011 Statement of Basis.

The objectives set forth for the Bettis Atomic Power Laboratory Corrective Action Permit and the Statement of Basis include:

- Restriction and control of access to, and subsurface work in, the vicinity of two inactive, underground, 40-inch Coke Gas Lines (Inactive Gas Lines) to prevent potential exposure of onsite workers to hazardous wastes and hazardous constituents and to prevent disruptions to the integrity of the Inactive Gas Lines.
- Placement of a notice in the deed prohibiting installation of on-site drinking water wells, should the property be transferred from Federal ownership.
- Maintenance of existing vegetative cover and warning signs at the Inactive Waste Site and Bettis Landfill. Maintain existing covers at the former Underground Waste Oil Storage Tank (UST/WOT) areas. Maintain existing cover and warning signs at the Trash Chute Area.
- Notify EPA in writing in advance of any changes to the Facility involving soil disturbances (i.e., excavation) for the Inactive Waste Site, Bettis Landfill, UST/WOT areas, Trash Chute area, and the Inactive Gas Lines.

- Continue to conduct periodic environmental monitoring of the following media to detect changes in concentrations of chlorinated volatile organic compounds: Material deposited in storm sewer system outfalls On-site wells Surface water and sediments in Bull Run Stream. The Permittee will annually provide to EPA results of the periodic monitoring and any proposed revisions to specific monitoring locations by the end of the following calendar year.
- Monitor the use of the Matheson Valley property (Parcel ID: 243-H-155), formerly Valley National Gas property, and its successors, on an annual basis to confirm the absence or presence of water supply wells and/or plans for installation of such wells. If use (or plans for such use) of groundwater are confirmed, this use will be reported by the Facility to EPA. This requirement shall continue for twenty (20) years from the Effective Date of the FDRTC, dated November 10, 2011, or until EPA informs the Permittee in writing that this requirement is no longer necessary.

Introduction: Long-term stewardship (LTS) refers to the activities necessary to ensure that engineering controls (ECs) are maintained and that institutional controls (ICs) continue to be enforced. The purpose of the EPA Region 3 LTS program is to periodically assess the efficacy of the implemented remedies (i.e., ECs and ICs) and to update the community on the status of the RCRA Corrective Action facilities. The assessment is conducted in twofold, which consists of a record review and remedy review meeting, to ensure that the remedies are implemented and maintained in accordance with the final decision.

Facility Background: The Bettis Atomic Power Laboratory Facility, located in West Mifflin Borough, Allegheny County, Pennsylvania (Facility), consists of approximately 208 acres and is bordered by commercial, industrial, and residential properties. A location map is attached as Figure 1. The Facility is owned by the U.S. Department of Energy (DOE) and provided dedicated design and support of reactor plants used in U.S. Naval nuclear-powered vessels since 1949. The Facility was used as an airfield from 1926 to 1948. The Inactive Waste Site (IWS) covers about 3.5 acres in the northern portion of the Facility and was used until 1964 to dispose of household wastes and excavation wastes from construction projects. The IWS is currently un-used and covered by a vegetative cover.

Current Site Status:

As discussed above in the Facility Background section, the subject property is owned by the US DOE and is currently operated under contract by the Fluor Marine Propulsion, LLC (FMP). The Property was originally used as an airfield from about 1926 – 1948. The general layout of the current Facility is based on the original airfield design. Bettis Atomic Laboratory's primary mission is focused on the design, development, testing and operational functions of nuclear reactor propulsion plants for US Navy surface and submarine vessels. In accordance with various permits, including EPA's August 2013 RCRA Corrective Action Permit, Bettis Atomic Laboratory is required to implement and maintain institutional and engineering controls, including monitoring of environmental media for both radiological and non-radiological contaminants of concern. This report focuses on the evaluation of institutional and engineering controls, as required by the Statement of Basis and Final Decision, and the RCRA Corrective Action Permit, which address only non-radiological concerns.

According to the Fluor Marine Propulsion, LLC (Fluor), Bettis Atomic Laboratory Calendar Year 2021 Environmental Monitoring Report, operations at the Site continued to be in compliance with

existing permits including monitoring of environmental media and applicable regulations governing use, emission, transport and disposal of solid, liquid, and gaseous materials and wastes. The Facility is required to meet the obligations of the EPA RCRA Corrective Action Permit, PA0890090004 (remaining in effect through administrative continuance). Components of the Final Remedy are also be implemented under the RCRA Storage Permit, issued by the Pennsylvania Department of Environmental Protection (PADEP). The Facility is also subject to various other state and local permits requiring environmental compliance and monitoring.

Environmental Monitoring:

Reference, below table from:

Fluor, Bettis Atomic Laboratory Calendar Year 2021 Environmental Monitoring Report

	Analysis					
Media Monitored	Frequency	Routine				
		Analyses				
LIQUID EFFLUENTS Bull Run Monitoring Station 	Semimonthly	Dissolved oxygen, fecal coliforms, oil and grease, pH, total suspended solids, temperature, total residual chlorine, total aluminum, total antimony, total arsenic, hexavalent chromium, total copper, dissolved iron, total iron, total lead, total zinc, bromoform, chlorodibromomethane, dichlorobromomethane, chloroform.				
	Semiannually	Alkalinity, ammonia, chloride, hardness, osmotic pressure, total dissolved solids.				
	Annually	Semivolatile organic compounds, total beryllium, total cad mium, total chromium, free cyanide, total mercury, total nickel, pesticides, polychlorinated biphenyls (PCBs), total selenium, total silver, total thallium, volatile organic compounds.				
 Springwater Intercept System (SIS) Outfall 007 	Semimonthly	Total aluminum, total iron, dissolved iron, pH, total suspended solids, tetrachloroethylene, trichloroethylene, trans-1,2-dichloroethylene.				
Stormwater Outfalls Outfall 006 & Outfall 008	Quarterly	Oil and grease, pH, total suspended solids, total aluminum, total iron.				
Sanitary Sewer	Semiannually	Biochemical oxygen demand, chloride, dissolved oxygen, hardness, oil and grease, pH, total suspended solids, temperature.				
(SAN- 10)	Annually	Total mercury, total silver.				
LIQUID INFLUENTS	Semimonthly	Dissolved oxygen, fecal coliforms, oil and grease, pH, total suspended solids, temperature, total residual chlorine, total aluminum, total antimony, total arsenic, hexavalent chromium, total copper, dissolved iron, total iron, total lead, total zinc, bromoform, chlorodibromomethane, dichlorobromomethane, chloroform.				
City Water	Semiannually	Alkalinity, ammonia, chloride, hardness, osmotic pressure, total dissolved solids.				
	Annually	Semivolatile organic compounds, total beryllium, total cadmium, total chromium, free cyanide, total mercury, total nickel, pesticides, polychlorinated biphenyls (PCBs), total selenium, total silver, total thallium, volatile organic compounds.				

NONRADIOLOGICAL ENVIRONMENTAL MONITORING

GROUNDWATER • Wells • SIS Springs	Annually	Volatile organic compounds		
SEDIMENT • Bull Run Monitoring Station • Bull Run Stream (BR1, BR5)	Annually	Volatile organic compounds		
Residual Materials in the Inactive Coke Gas Lines	Annually	Amount of deposited material		
SURFACE WATER Bull Run Stream (BR1, BR5) 	Annually	Volatile organic compounds		

NOTES: (1) The monitoring method used in this program is "grab" sampling.

Long-term Stewardship Site Evaluation Meeting (Microsoft Teams Meeting):

On September 13, 2023, EPA conducted a long-term stewardship desk top evaluation of the Bettis Facility, meeting with Facility representatives to discuss and assess the status of the implemented remedies at the site. The participants included:

Name	Organization	Phone	Email Address
Todd Richardson	EPA Region 3, RPM	215-814-5264	richardson.todd@epa.gov
Jeff Christopher	EPA Region 3, Hydrogeologist	215-814-3392	Christopher.Jeff@epa.gov
Andrew Wank	Naval Reactors Laboratory Field Office	412-476-7265	andrew.wank@nrp.doe.gov
David Harper	Naval Reactors Laboratory Field Office	412-476-7293	david.harper@nrp.doe.gov
Amy Greathouse	Naval Nuclear Laboratory	412-476-5780	amy.greathouse@unnpp.gov
Bob Kebe	Naval Nuclear Laboratory	412-476-6618	robert.kebe@unnpp.gov
Brian Knierim	Naval Nuclear Laboratory	412-476-7554	brian.knierim@unnpp.gov

EPA Permit: The permit is the method for implementing institutional and engineering controls required as a condition of the Statement of Basis and Final Decision. The EPA Permit is effective as of August 21, 2013, and although expired on August 20, 2023, it remains in effect through administrative continuance (in accordance with 40 C.F.R. § 270.51(a)). The following ICs and ECs apply to the Bettis Atomic Lab facility, shown on **Figure 1**.

The LTS evaluation checklist below was completed Bettis Atomic Laboratory personnel/representatives, reviewed by EPA, and discussed during the September 13, 2023 Long-term Stewardship Site Evaluation Meeting.

Institutional Controls (ICs) and Engineering Controls (ECs):

Several institutional and engineering controls continue to be implemented at the Bettis facility including:

- Deed restriction preventing installation of on-site drinking water wells;
- Zoning ordinance preventing residential construction on facility property;
- Requirement to monitor land use downgradient of Inactive Waste Site (IWS) for absence or presence of water supply wells; and
- Maintenance of caps/covers at Inactive Waste Site, former Underground Storage Tank/Waste Oil Storage Tank areas, and Trash Chute Area.

Institutional and Engineering Controls Status:

Deed restrictions and zoning ordinances remain in place.

Vegetative covers on the IWS, former Underground Storage Tank/Waste Oil Storage, and Trash Chute area continue to be maintained, and are in good condition, with mowing occuring annually.

Groundwater Monitoring: The Facility's RCRA Corrective Action Permit impose operation and maintenance and groundwater monitoring requirements on the entire Facility. In accordance with the RCRA Corrective Action Permit, groundwater continues to be monitored on an annual basis. Also see attached, Table 1, Bettis Atomic Laboratory Long Tern Stewardship Checklist

Groundwater Sampling History and Data Summary:

Facility groundwater monitoring wells monitor five water-bearing zones beneath the Facility down to and including the Pittsburg Coal Water-Bearing Zone. In order of increasing depth: Perched, Benwood Limestone, Sewickley Sandstone, Pittsburgh Sandstone, and Pittsburgh Coal. On-site seeps and springs are surface discharge points for groundwater from the Benwood or Sewickley Water-Bearing Zones. At a minimum, groundwater is monitored for VOCs on an annual basis.

The most recent groundwater monitoring results, as reported in the Fluor, Bettis Atomic Laboratory Calendar Year 2021 Environmental Monitoring Report are presented in the table below. VOCs, primarily tetrachloroethylene (PCE) and its degredation products, trichloroethylene and 1,2-dichloroethylene are the primary contaminants of concern. Results of groundwater sampling conducted as part of the RFI indicated average total VOC concentrations in water bearing zones as follows: Perched, 0.1 mg/l; Benwood Limestone, 1.3 mg/l; Sewickley Sandstone, 5.9 mg/l; and Pittsburgh Sandstone, 0.065 mg/l. Results from the 2021 monitoring indicate that the average VOC levels in these water-bearing zones were less than those reported in the RFI. On average VOC concentrations appear to be decreasing, and/or indicating VOC degredation.

Reference, below table from:

Fluor, Bettis Atomic Laboratory Calendar Year 2021 Environmental Monitoring Report

GROUNDWATER AND SURFACE WATER NONRADIOLOGICAL GROUNDWATER AND SURFACE WATER RESULTS Units: mg/l

Watan Daarin a	NA /-11	Analytes ⁽¹⁾⁽²⁾					
vvater-Bearing Zone	No.	DOF	TOF	DCE			
		PCE	ICE	cis-	trans-		
	35	<0.001	<0.001	0.0013	<0.001		
	57	<0.001	<0.001	0.0058	<0.001		
	68	<0.001	<0.001	0.0130	<0.001		
Benwood Limestone	80	<0.001	<0.001	<0.001	<0.001		
	92	<0.001	<0.001	0.0026	<0.001		
	100	<0.001	<0.001	<0.001	<0.001		
	36	<0.001	<0.001	0.0011	<0.001		
Sewickley Sandstone	51	0.700 E	0.180 E	0.084 E	0.0013		
	65	0.0320	0.0250	2.000 E	0.0220		
	98	<0.001	<0.001	<0.001	<0.001		
	60	0.0220	0.0025	<0.001	<0.001		
	61	<0.001	<0.001	<0.001	<0.001		
Pittsburgh Sandstone	75	<0.001	<0.001	<0.001	<0.001		
	96	<0.001	<0.001	0.0014	<0.001		
Ditta humuh Oa al	44A	0.0054	0.0028	0.0091	<0.001		
Pittsburgh Coal	95	<0.001	<0.001	<0.001	<0.001		
Bull Run Stream Surface Water Results							
BR1		< 0.001	< 0.001	<0.001	<0.001		
BR5		<0.001	<0.001	<0.001	<0.001		

NOTES:

(1) Samples were analyzed for approximately 40 volatile organic compounds. Only the results for the potential contaminants of concern are reported (PCE = Tetrachloroethylene; TCE = Trichloroethylene; DCE = 1,2- Dichloroethylene). Results for the other volatile organic compounds were typically less than the minimum quantitation level that was generally 0.001 mg/l. The reported results represent the maximum results where more than one sample was analyzed from a sample location.

(2) Results with an "E" qualifier indicate that the associated result exceeded the calibration range.

Financial Assurance: Due to the minimal cost of post-remedial activities (e.g., annual monitoring of an off-site property for groundwater use) that must be performed as part of the remedy for the Facility, financial assurance is not required.

<u>Reporting Requirements/Compliance:</u> All reporting requirements in accordance with active Permits have been met. Bettis submits annual Environmental Media Monitoring Reports.

<u>Mapping:</u> The EPA facility website map is accurate and includes the 208-acre Bettis Atomic Laboratory property. A downloadable geospatial PDF map is available on EPA's corrective action facility webpage under the "Reports, Documents and Photographs" section, found at: <u>https://www.epa.gov/hwcorrectiveactioncleanups/hazardous-waste-cleanup-bettis-atomic-powerlaboratory-west-mifflin#Controls</u>

<u>Conclusions and Recommendations</u>: No Engineering Control/Institutional Control deficiencies were identified. As seen attached pictures, engineering controls appear to be in place and well maintained. Overall, the facility appears to be well maintained, with vegetative covers in good condition. All requirements of the Final Remedy, and Permits are being met. EPA has determined that the remedy institutional and engineering controls have been fully implemented.

Files Reviewed:

- 1. EPA RCRA Corrective Action Permit, Bettis Atomic Laboratory 8/21/13
- 2. EPA Statement of Basis, Bettis Atomic Laboratory, 8/31/13
- 3. EPA Final Decision Response to Comments, Bettis Atomic Laboratory, 11/10/2011
- 4. Fluor, Bettis Atomic Laboratory Calendar Year 2021 Environmental Monitoring Report
- 5. Final RCRA Facility Investigation Report for the Bettis Atomic Power Laboratory, West Mifflin, Pennsylvania, June 1994.

Attachments:

Figure 1: Aerial Map of Bettis Atomic Laboratory

 Table 1: Bettis Atomic Laboratory Long Term Stewardship Checklist

Picture 1: J Building Underground Storage Tank / Waste Oil Tank (UST/WOT) Location

- Picture 2: Signage Present at J Building UST/WOT Location
- Picture 3: Bettis Landfill
- Picture 4: Bettis Landfill Vegetative Cover
- Picture 5: Groundwater Monitoring Well # 75 (protective bollard post)
- Picture 6: Groundwater Monitoring Well # 75 (secured)
- Picture 7: Perimeter Fencing with Signage



Figure 1: Aerial Map of Bettis Atomic Laboratory Facility Property

Table 1

Bettis Atomic Laboratory

Long Term Stewardship Checklist (Responses provided by Bettis Atomic Laboratory Representatives)

IC Review and Assessment Questions:	<u>Yes</u>	<u>No</u>	<u>Notes</u>
Have the ICs specified in the remedy been fully implemented? Implementation mechanism in place?	X		Subsurface work in the vicinity of the 40-inch Inactive Gas Lines (Coke Gas Lines) is restricted and access is controlled via site perimeter fence, locks, and warning signs. Deed restriction prohibiting installation of on-site drinking water wells will be completed if property is transferred from Federal ownership. Vegetative cover and warning signs are maintained at the Inactive Waste Site and Bettis Landfill. Existing cover is maintained at the former Underground Waste Oil Storage Tank (UST/WOT) areas. Existing cover and warning signs are maintained at the Trash Chute area. The cover and signage are verified through routine monitoring. The EPA is notified in writing prior to any changes to the Facility involving soil disturbances for the Inactive Waste Site, Bettis Landfill, UST/WOT areas, Trash Chute area, and the Coke
 Do the ICs provide control for the entire extent of contamination (entire site or a specific portion)? 	Х		Current monitoring indicates control for the entire extent of contamination.
Are the ICs eliminating or reducing exposure of all potential receptors to known contamination?	Х		
• Are the ICs effective and reliable for the activities (current and future) at the property to which the controls are applied?	X		
 Have the risk of potential pathway exposures addressed under Corrective Action changed based on updated screening levels and new technologies? 		Х	
Are modifications to the IC implementation mechanism needed? (i.e. UECA Covenant, Permit or Order)	X		An application to renew the current Permit for Corrective Action {PA0890090004} was submitted to EPA on 21 February 2023 via letter NRLFO:AMO-P:ESR:23-032. This includes proposed modifications to Section Band Attachment C of the permit.
• Are there plans to develop or sell the property?		Х	There are no plans to sell the property, which is owned by the U.S. Government. Continual investment in buildings and infrastructure is planned
Have all reporting requirements been met?	X		Written notifications for soil disturbances are submitted to EPA per Section B.4 of permit. Sampling data is reported to EPA annually per Section B.5 of permit.

Groundwater Remedy Review and Assessment Questions:	<u>Yes</u>	<u>No</u>	<u>Notes</u>
 Is groundwater onsite used for potable purposes? 		Х	
 Is the Facility connected to a public water supply? 	Х		
• Have any new wells been installed at the facility?	X		Two injection wells and four observation wells were installed to support the Well 65 Enhanced In-Situ Bioremediation project. EPA Form 7520-16, Inventory of Injection Wells, was submitted to EPA on 8 July 2020 via letter NRLFO:AMO-P:ESR:20-183 as required by 40 CFR 144 Underground Injection Control Program. EPA (Miller) was briefed in 2020 prior to the well installation to support the Monitoring Well 65 project. Subsequent updates were provided to EPA after the well installation. Five temporary monitoring wells were installed south of the Bettis Landfill to monitor groundwater elevation to support installation of a new storm water detention basin. Those five wells will be decommissioned.
 Are the current groundwater flow rate and direction similar as mentioned in the previous studies? 	Х		
• Groundwater contaminants stable or decreasing in concentration?	Х		
• Are groundwater monitoring wells still in place(# wells)?	Х		Sixteen (16) groundwater monitoring wells are sampled annually as required by Section B.5 of the permit.
 Any evidence or reason to re-evaluate the number and location of monitoring points and/or monitoring frequency? 	х		Reduction in groundwater monitoring was formally requested in letter NRLFO:AMO- P:ESR:22-229 dated 23 November 2022 and accounted for in the 21 February 2023 permit renewal application submittal.
 For wells where groundwater monitoring is no longer required, have the wells be decommissioned? 			Not Applicable - No groundwater monitoring wells have been removed from the current permit.
 Is there evidence of monitored natural attenuation occurring in groundwater? 	Х		PCE degredation products detected in groundwater (spring water data) analytical result
 Has (active remediation system) been maintained as necessary? 	х		Spring water Intercept System (SIS) – Quarterly O&M Report documents all repairs and releases at intercept trench.
 Is the (groundwater containment system) effectively containing COCs and protecting potential receptors (surface water body and/or groundwater resource) via hydraulic control? 			Not Applicable

	In 2010, notifications were made to local
 Have notification letters been sent to the local POTW, 	municipalities and the Allegheny County
County Department of Health, and Dianning and Zaning	Health Department to inform them of the
County Department of Health, and Planning and Zoning	EPA's proposed decision to amend the
Department regarding groundwater use restrictions?	environmental corrective measure.
	requirements at Bettis.

Surface and Subsurface Remedial Review and Assessment	Yes	No	Notes
Questions:			
 Is the facility being used for residential purposes? 		Х	
 Have there been recent construction or earth-moving activities or plans for such? 	Х		Recent site construction activities have not impacted the legacy areas under the Permit for Corrective Action (Inactive Waste Site, Bettis Landfill, UST/WOT areas, Trash Chute area, and the Coke Gas Lines). Future planned excavations involving a security fence upgrade and a water line replacement are in the vicinity of the Coke Gas Lines. Advance notification for these projects will be provided as required by Section B.4 of the permit.

Engineered Cap or Cover Remedial Review and Assessment Questions:	<u>Yes</u>	<u>No</u>	<u>Notes</u>
 Have geosynthetic/vegetative landfill caps (name) been properly maintained? 			Not Applicable - While the Bettis Landfill and Inactive Waste Site do not have geosynthetic/vegetative landfill caps, vegetative cover is maintained on the surface at both locations.
• Have any repairs been necessary? (i.e. regrading, filling, root removal)		Х	
 Is the leachate collection system operating and effectively preventing groundwater contamination? 			Not Applicable

Miscellaneous Review and Assessment Questions:	<u>Yes</u>	<u>No</u>	Notes
• Is the security fence intact?	X		Security fence is intact around the developed portion of the site which includes the UST/WOT areas and most of the length of the Coke Gas Lines on the property. Access to the Inactive Waste Site, Bettis Landfill, and Trash Chute Area is restricted and controlled through secure access points and a 24/7 onsite security force.
• Is the appropriate signage posted?	Х		Signage is present at the Inactive Waste Site, Bettis Landfill, and Trash Chute Area, as required. Verified by routine monitoring.

Picture 1 J Building Underground Storage Tank / Waste Oil Tank (UST/WOT) Location





Picture 2

Picture 3 **Bettis Landfill**



Picture 4 <u>Bettis Landfill Vegetative Cover</u>



Picture 5 Groundwater Monitoring Well # 75 (protective bollard post)



Picture 6 Groundwater Monitoring Well # 75



Picture 7

Perimeter Fencing with Signage

